

# Patterns of Bird Window Strikes on USU Campus and Physical Features that Increase Risk for Collision

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## Introduction

Since January 2017, data on bird window collision frequency on USU campus has been systematically collected via a census route. Data on species type, tree density, window area, and monthly counts have also been collected and analyzed. This data has allowed us to pinpoint certain problem areas that are particularly deadly to birds, and to advise the university on measures they can take to reduce strikes. It has also allowed us to identify certain factors that increase the risk of bird window collisions that can be generalized to any area.

## Methods

- Census routes were designed to survey a representative sample of buildings with different dimensions, window types and sizes, and landscape and architectural features.
- During the school year, students in Dr. Sullivan's classes conducted the survey routes, counting strike marks and collecting feathers and carcasses.
- During the summer, a group of community and student volunteers covered the census routes.
- Additional data were collected to supplement the census, including the number of trees in the death zone (15-30 feet) for each building, the types of species found each month, and the window area on each building side surveyed.
- As the census was continuing, we researched mitigation solutions and advised the university on retrofitting methods and new architecture features that help reduce window collisions.



**Fine Arts Visual**  
**83 strikes**



**Biology and Natural Resources**  
**71 strikes**



**Old Main**  
**83 strikes**



**ENLAB-SER Skywalk**  
**67 strikes**



**University Inn**  
**36 strikes**



Figure 1: Top five problem areas on campus

## Problem Areas

The census data allowed us to pinpoint five areas with the highest number of strikes, shown in Figure 1:

**Fine Arts Visual: 83**  
**Biology and Natural Resources: 71**  
**Old Main: 71**  
**Engineering Skywalk: 67**  
**University Inn: 36**

## Conclusions

Figure 3, displaying the strikes per month by species data, shows that cedar waxwings and robins are the species with the highest number of collisions overall. Robins were the most common species in the early months of the year and cedar waxwings were most common in the fall. In the summer months, a much higher variety of species experienced window strikes.

Figure 2 compares the number of trees in the "death zone," which is 15-30 feet from a window, with the number of strikes on each side of each building surveyed. A positive correlation between strike frequency and number of trees in this area was found, confirming previous findings in other studies.

Overall, we identified several variables that influence the distribution and frequency of window collisions, including:

- Season and temperature
- Surface area of glass
- Proximity to trees and shrubs
- Presence of human disruption (e.g., construction)
- Species type
- Migration season
- Hunting by predatory birds
- Reflectivity of windows
- Types of trees (fruit bearing or not)

## Going Forward

Efforts to mitigate window collisions in certain areas have been approved and are soon to be put into effect:

- ENG/SER – Feather friendly film
- BNR/NR – Collidescape
- FAV – Design competition
- For buildings that appearances cannot be altered, such as Old Main and the University Inn, a new research idea is in development, and experiments using UV paint and blacklight emitters will be carried out this year

## Window Collisions Compared to Number of Trees in Death Zone

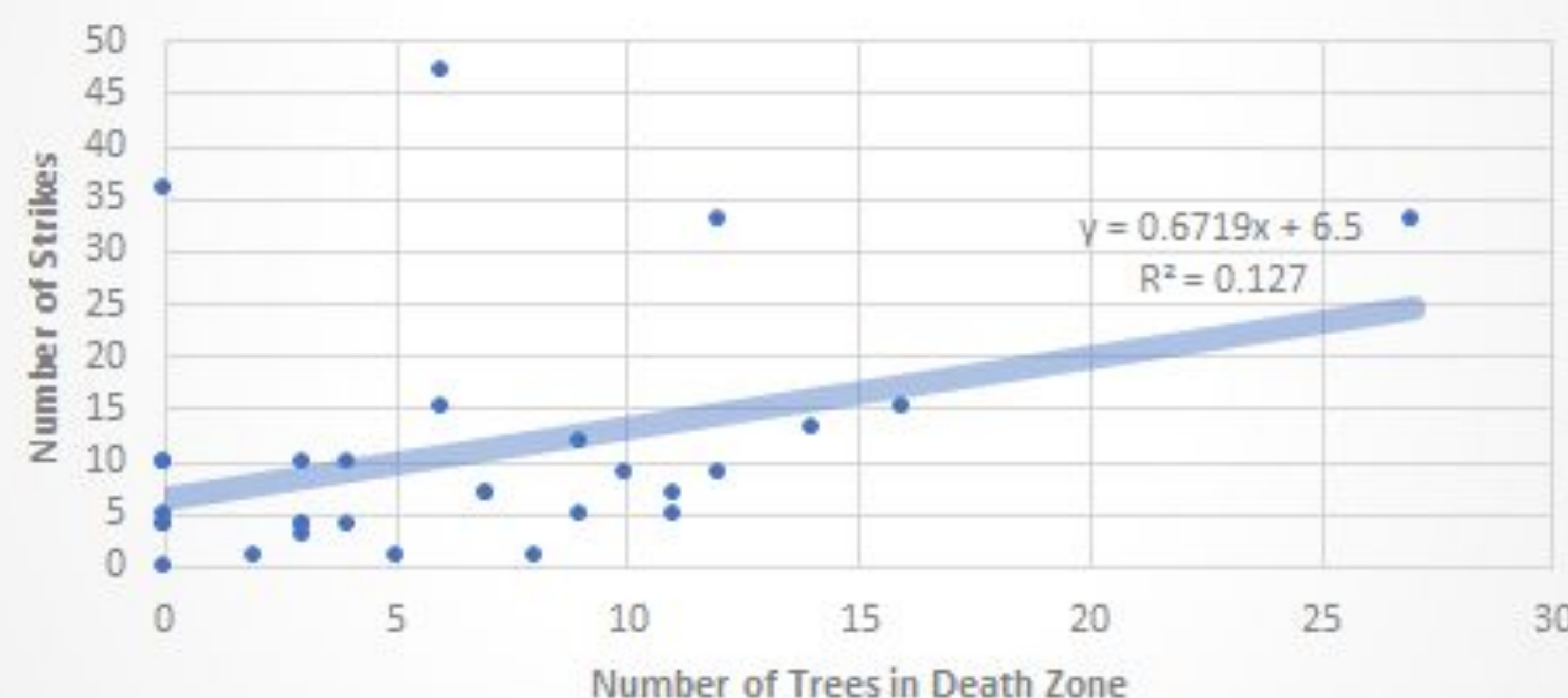


Figure 2: Trees in death zone compared to strike frequency

## SPECIES DATA BY MONTH

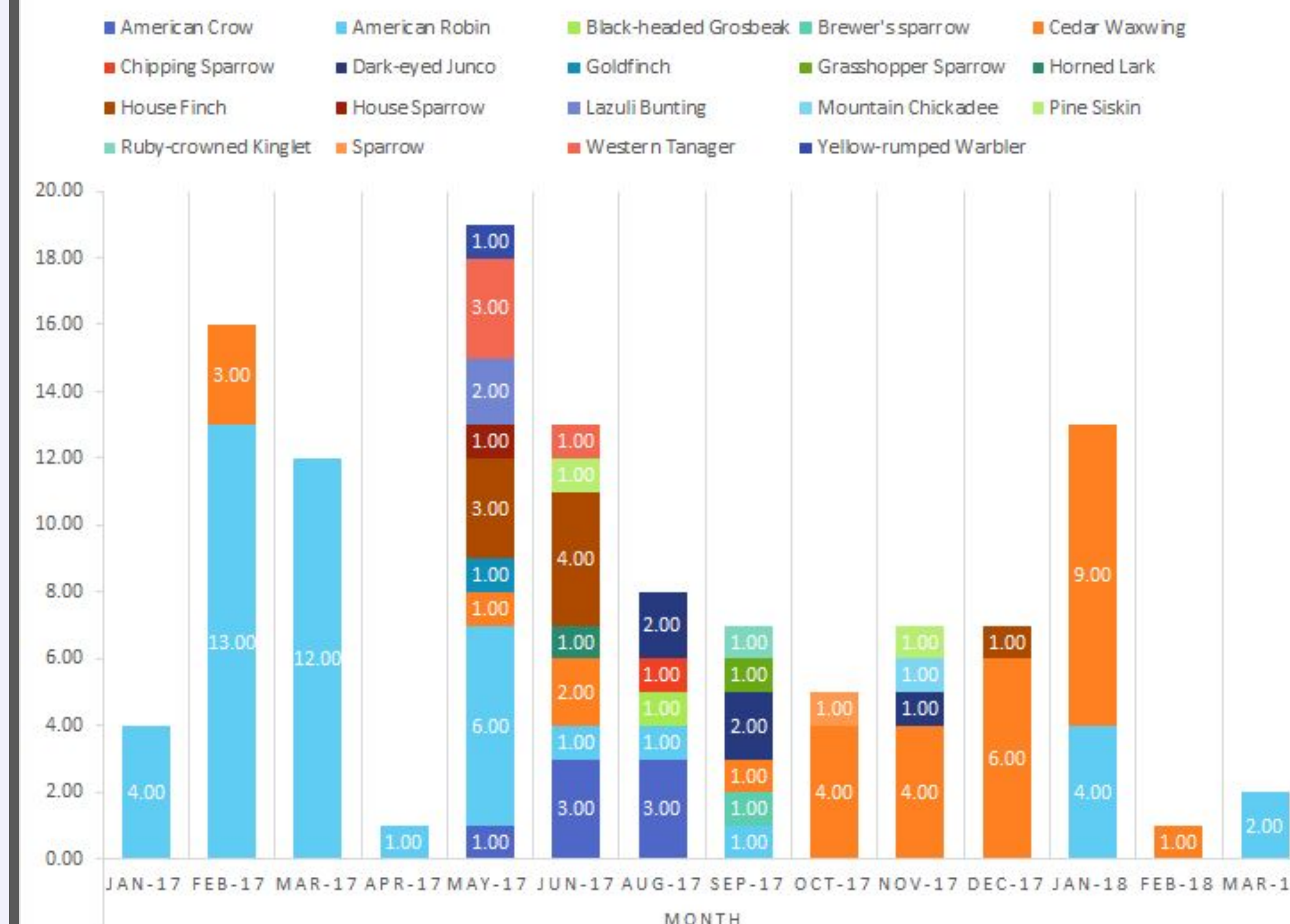


Figure 3: Collisions by species per month